

**SYSTEMATIC EXPLORATION OF THE ADRIATIC – THE BASIS OF
SUSTAINABLE DEVELOPMENT OF THE COUNTRIES OF ADRIATIC-
IONIAN FORUM**

On behalf of the County Chamber of Rijeka,
Mirjana Kovačić, M.S.

ABSTRACT

This paper clearly and systematically presents the strategy for integrated managing of human activities in the protection of the ecologic system of the Adriatic. The objective of systematic approach is determined, based on renewing and maintaining the ecological system, aimed at preserving biological diversity and entire quality of living through managing the systems. The paper indicates the links of such systems with main social and economic development objectives of member states. This assumes systematic exploration of the ecological system of the sea, especially of estuaries, in order to ensure compatibility between exploitation and protection of sea resources, development and implementation of new technologies, improvement and increase of cooperation among the countries and coordination of the projects. Particular attention is given to the importance of the research of:

- **Impact of economic activities to coastal sea,**
- **Managing biologic goods,**
- **Protection of biologic diversity,**
- **Abnormal phenomena which jeopardise the health of people, tourism, nautical tourism and fishing,**
- **Development of technologies and instruments needed for monitoring, exploitation and protection of the Adriatic.**

1. INTRODUCTION

Countries situated in the Adriatic, including Croatia, are facing a great danger of degrading of its maritime wealth through pollution, unreasonable exploitation and alienation. This jeopardises all Adriatic ecologic systems, various potentials for exploitation of sea and coast, including tourism, fishing and healthy food production.

The Adriatic Sea is specifically subtle ecological system and long-term disturbances reflect to all biological processes resulting in changes in diversity and productivity. Although the Adriatic may be divided, in terms of oceanographic and ecological characteristics, to three areas, it is still an integral unity, mutually connected through circulation systems and with continuous mutual influences. Therefore, appreciation of the whole Adriatic and consequently, organisation of its protection, may only be implemented by considering the stated facts.

2. EVALUATION OF THE STATE AND POLLUTION SOURCES

Croatian coastal area has significant development potential and complex social, demographic, economic and ecological processes occur there, thus being one of the most jeopardised parts of Croatia. The need to protect and preserve specific values of the coastal area and the sea is conditioned by the current intensively encouraged development and frequently illegal occupation of the most valuable sections of the area for various human activities. Islands are particularly threatened parts of the coastal area, where, besides the stated forms of threats, the development is affected also by an unfavourable demographic situation.

The process of urbanisation, migrations of people from inland (rural) areas to coastal (urban) areas, significantly affects the consumption of the coastline and the quality of sea and water. One third of European population (200 million) live in the coastal area. In the Mediterranean almost 90% of urbanised area is located in the coast (from Spain to Greece). It is estimated

that by 2025 an average of 85 % of the population of the region will live in the coastal cities.

The general trend of urbanisation of the coast mostly happens as a result of tourist construction which frequently has strong negative visual effects. Tourist traffic is increasing and the structure of tourists changes, hence there are more those who require a clean and preserved environment. Tourists are becoming more mobile, and their pressure extends from a beach and accommodation place to the entire area of a tourist destination. The construction of marinas which occupy constantly increasing water and land area (the number of vessels indicate a continuous growing trend) additionally create the pressure to the environment.

The programme of testing of the quality of the sea determines the permanent sources of pollution. Units of regional and local self-government have been warned about the need to solve the problems of “black points” of communal infrastructure (sewage systems and their ancillary objects) and requirements have been given for improving individual pollution sources. The project of protection of water pollution in the coastal area, adopted by the Croatian government in 2003 together with 47 sub-projects, analysed the current situation and the need to construct and/or reconstruct sewage systems and systems for purifying waste waters of cities and regions. It was also concluded that a series of Adriatic ports do not have adequate devices for collecting mud and other waste waters from ships, although Croatia is a signatory state of the respective conventions and protocols, and there is also a requirement for complying to the European Decree 2000/59/EC, which will require urgent appropriate interventions.

However, Croatian coast has retained its status of one of the best preserved parts of the Mediterranean.

3. LEGAL FRAMEWORK

The Strategy and the Programme of physical planning of the Republic of Croatia (“Official Gazette” no. 50/99) are documents which establish the basis of spatial and environmental planning of the state. They are

the starting points, framework and place for harmonising the interests of all users of the space.

The Strategy and the Programme define the importance of the Adriatic coastal area and give directions for physical planning by adopting the principles of sustainable development within the integral concept of sustainable development determined by the Agenda 21 (Rio, 1992) and MED Agenda 21 (Tunis, 1994).

If all activities are aimed at sustainable development of the coastal area and at the exploitation of the sea and coastal natural resources, this primarily assumes integral planning of the Adriatic area and rational management of the exploitation of natural resources. As a result it is necessary to develop the institutional form which would create conditions for systematic and permanent management of the coastal area.

Until the Ordinance on the protection of the coastal area was adopted, the development pressures to the coastal area resulted in disrupting the balance of biological diversity and integrity of particularly valuable coastal ecological systems, uncontrollable construction along the coastline and privatisation of the maritime domain, construction at the coastline and in the narrow coastal belt, the loss of coastal belt and decrease of the quality of the sea for swimming and recreation and for production of healthy food. Contrary to previous period characterised by social motives in construction, the current period is determined by speculative or profit motives.

It is to expect that in the future the coastal area of the Croatian Adriatic coast will be one of the most interesting entrepreneurial and construction areas. It will also be of great economic investment interest for the European Union. Inadequate, legal and illegal construction, especially in tourist and city areas, is still a threat for the preservation of coastal area. The coast as a public good needs to be accessible to all inhabitants. The urbanisation processes in coastal areas have irretrievable effects to the land, water and quality of the landscape. Only safe and efficient regulations and complied spatial plans will prevent negative trends of uncontrollable construction.

Respecting the need to exchange data of European Union in the domain of water and natural heritage protection, it is necessary to intensify the

cooperation among neighbouring countries and to strengthen the exchange of data relating to spatial planning observing the conclusions of the Council of Europe – CEMAT within the Administration for physical and landscape planning.

UN Convention on the Law of the Sea has a special significance for the protection of the Adriatic:

- UNCLOS – UN Convention on the Law of the Sea
 - One of the most important instruments for regulating relations and activities at sea
 - Stipulates preservation and managing living wealth
 - Regulates protection and preservation of the marine environment
 - UNCLOS – distinguishes various sea areas
 - Internal sea waters
 - Territorial sea
 - Exclusive economic belt
 - Epicontinental belt
 - Open sea.

These distinctions are crucial for defining measures of protection of sea environment since:

- The nature of the Adriatic Sea as a semi-closed sea requires regional cooperation in preserving the sea environment and fish resources,
- The protection of the Adriatic is of interest to all coastal states, and is a key presumption for further economic prosperity.

4. UNDERTAKEN MEASURES, RESEARCHES AND RESULTS

The measures for protecting waters and sea are implemented in all territory of Croatia. Significant means have been invested so far. Purifying of waste waters has doubled, but the efficacy of removing polluting substances is not satisfactory. Simultaneously, the attachments of inhabitants' dwellings to the public sewage system increased. The main problem of waters and sea

protection is the disproportion between the level of water supply (76%), attachments to sewage (43%) and waste waters purification (25%). In coastal area there is a need to introduce additional more complex water protection measures. The sea along the mainland coast is far more polluted by faecal waste waters than the island coasts. The reason to this is dense urbanisation and inadequate collecting, drainage and discharge of waste waters into the sea. In future the control of the water condition will be intensified, and a polluters registry be kept.

Protection of the sea has been practiced for years, but the most significant project is the *Project Adriatic*, which started in 1998. It was planned that the implementation of the project will last for 6 years or longer if necessary. The subjects of the project are:

- Institute *Ruđer Bošković*
 - Centre for the Research of the Sea – Rovinj
 - Bureau for the Research of the Sea and the Environment – Zagreb
- Institute for Oceanography and Fisheries – Split
- Croatian Hydrographic Institute - Split
- University of Zagreb
 - Department of Biology
 - Department of Geophysics
- University of Dubrovnik
 - Institute for the Sea and Coast – Dubrovnik.

By continuous research of ecological system and its dynamics it is possible to formulate the aims which are the basis for defining the strategy for integral and integrated management of human activities. Croatian scientists and experts defined the following objectives of the protection of the Adriatic:

- Systematic research of the ecological system of the sea in the entire national area, especially of estuaries,
- Strategic research of the sea aimed at ensuring compatibility between exploitation and protection of the sea resources,

- Development and implementation of new technologies,
- Improving and increasing cooperation among the countries and joint engagement in the projects.

Within the Project Adriatic special researches are conducted relating to the impact of economic activities to sea pollution, in particular to:

- ***Pollution of the sea from land and air sources***
- ***Sanitary quality of the beaches***
- ***Sanitary quality of the shell farms***
- ***Consequences of excessive eutrophication***
- ***Level and influence of pollution to particular areas (hot points)***
- ***Interaction of fish farms and the environment.***

The results of the researches indicate the necessity to develop new technologies:

- ***Development and implementation of the system for local receiving and processing of the satellite signal***
- ***Development and implementation of the system at buoys with remote transmittance of data***
- ***Development and implementation of appropriate fishing tools.***

Therefore it is of particular importance to adopt proposals and recommendations relating to:

- Improvement of scientific and other cooperation
- Establishing Coordinated Adriatic Observing System.

CONCLUDING THOUGHTS

The quality of the Croatian part of the Adriatic Sea is satisfactory despite moderate pollution of certain semi-closed coastal areas. It has a good quality in terms of eutrophication level and on average there are no significant changes, and according to the available data the hazardous substance load is below the

border values. The results of the sea quality tests in the last decade indicate that the Croatian part of the Adriatic Sea is of satisfactory quality. The average of annual samples which did not satisfy the strict criteria pursuant to the Decree on the standards of the beach sea quality does not exceed 3% but seasonal results are much worse.

The area of the Croatian Adriatic has been in details evaluated in the Physical plans of Adriatic counties. It is necessary, within the *Project Adriatic* and other research projects, to perform continuous monitoring of coastal sea and pollution sources. The public needs to be regularly informed about the state of the Adriatic, and annual reports have to be submitted to competent institutions.

Scientists and junior researchers in particular need to be involved in all aspects of the problems relating to the Adriatic. Financial means and personnel designated to the projects relating to waters and sea have to be connected or harmonised, and financing of research activities within internationally recognised institutions needs to be increased, in order to be recognised as equal partners in international projects in the Adriatic. It will be possible by:

- Defining the strategy of Adriatic research development,
- Linking science, economy and tourism,
- Investing into infrastructure and people.

PROTECTING ADRIATIC FROM POLLUTION
**Systematic research of the Adriatic Sea – the basis of sustainable
development of Adriatic-Ionian Initiative member states**

At a workshop on ecology held during the 7th Adriatic-Ionian Forum the participants presented and discussed their expert studies, discussed the condition and problems related to the topic and defined the following conclusions:

I. STARTING POINTS

- The Adriatic Sea and its coastal area is an invaluable national treasure which need to be thoroughly researched, carefully protected, wisely exploited and not alienated at any cost. The area has a significant development potential at which complex social-demographic, economic and ecological processes occur and it is one of the most threatened parts of Adriatic countries.
- All Adriatic countries, members of the Adriatic-Ionian Initiative, are facing a great danger of degrading their water and marine wealth through pollution, unreasonable exploitation and alienation. In this way all Adriatic ecological systems, various potentials of exploitation of sea and coastal area, including tourism, fishery and healthy food production are jeopardised.

II. PROTECTIVE MEASURES

- To adopt provisions of the relevant international conventions and protocols and expand mutual cooperation which will prevent international atmospheric, land and sea processes of degrading waters and sea by polluting them.
- To intensify talks with all coastal states for the purpose of coordinated actions at protection and preservation of the Adriatic as a particularly important ecological system.
- To intensify and accelerate the efforts of all member states of the Adriatic-Ionian Forum in order to realise joint activities with neighbouring countries

and with international community for implementing international conventions, protocols and other documents signed by those states.

- In compliance with the International Convention on the ballast waters, impose and ensure an efficient system of managing ballast waters in major Adriatic ports.
- Develop a study about consequences of possible tanker averages in the Adriatic for the inhabitants, tourism and the life in the sea.
- Organise the control over ecologically highly sensitive part of the Adriatic by establishing efficient civil service Coast guard, due to the increase of tourist development and of tanker and other vessels traffic.
- Accelerate the implementation of the Project for coastal waters pollution protection of the member states, since the problem of infrastructure of communal waste waters is probably the most pressing problem in the Adriatic.
- Accelerate acquiring financial help from international funds.
- Define integral ecological protection projects, like, for instance, the Kaštela Bay Protection Project (*EKO – Kaštelanski zaljev*).

Comprehensive solution for the protection of the Adriatic has to observe national strategic objectives, adopted international obligations and to ensure economic and social sustainability.

III. TASKS

- Encourage educational institutions and government administration to promptly implement educational programmes for sustainable development with distinguishing interdisciplinary topic on water and sea. The issue needs to be included in the compulsory school curricula, outside-school activities and lifelong learning.
- Establish efficient system of watching in the Adriatic.
- Include the public and civil organizations related to the Adriatic into extensive public debates on relevant questions.
- Promote the implementation of the insurance system against averages and other ecologic sea incidents in compliance to international regulations and practice, especially by imposing discouraging fines for ecological offences

and accidents.

- Define projects aimed at developing and increasing administrative powers related to protection of the sea and sea environment.